

**Black Hills Area Botanist & Ecologist Workshop
(BHABEW VIII)
March 10, 2011**

8:30 – 9:00 Coffee's on!

9:00 – 9:10 Welcome and Introductions

- Door prize drawings

9:10 – 10:30 Presentations and Discussion

- Chelsea Vollmer – Update from the Black Hills National Forest Botany Program (10 minutes)
- Jill Larson – Englewood Spring Botanical Area floristic inventory results and management strategy highlights (30 minutes)
- Beth Burkhart and Kevin Kovacs – Updating the Wind Cave National Park 1999 vegetation map (30 minutes)

10:30 – 10:40 Break

10:40 – 12:00 Presentations and Discussion

- Nancy Drilling – Black Hills Owl Surveys 2009-2010 (20 minutes)
- David Drons – An inventory of native bees (Hymenoptera: Apoidea) in the Black Hills of South Dakota (20 min)
- Benjamin van Ee and Mark Gable – A revision of the Flora of South Dakota (20 minutes)
- Daryl Mergen and Mark Gabel – Analyses of *Phleum* species (timothy and alpine timothy) in the Black Hills of South Dakota (15 minutes)

12:00 – 1:15 Lunch

1:15 – 2:45 Presentations and Discussion

- Kate Cueno – Initial ecological effects of thin and chip on two ponderosa pine forests in the Black Hills (20 minutes)
- Amy Symstad and Jayne Jonas – Factors that affect plant species richness in Great Plains grasslands: What do we know? (20 minutes)
- Aurora R. and Jack Butler (presenter) – Germination characteristics of prairie dropseed, blanketflower, and hairy goldaster in response to prechill and temperature treatments (20 minutes)
- Anine Smith, Alan Knapp, and Amy Symstad – Ecosystem and community responses to nitrogen deposition in two northern Great Plains national parks (20 minutes)

2:45 – 2:55 Break

2:55 – 4:05 Presentations and Discussion

- Scott Guffey – South Dakota Weed and Pest laws and the state declared noxious weed list (20 minutes)
- Eugene Bolka – Biological control agents for invasive plants in the Black Hills (25 minutes)

- Milt Haar – Spurge flax (*Thymelaea passerina*) at Badlands National Park: Discovery and preliminary herbicide control trials (20 minutes)

4:05 Wrap-up

Presentation Descriptions

Poster

Beth Gastineau & David Hartnett -- The poster will highlight some of my thesis research on *Marrubium vulgare* (horehound) in Wind Cave National Park. *Marrubium vulgare* life history traits, population dynamics, and associations with vegetation and soils will be discussed.

Jack Butler, Lan Xu, & Eric Boyda – Vegetation heterogeneity within and among prairie dog colonies on northern Great Plains grasslands.

Sarah Burnette, Amy Symstad, Roger Gates & Wes Newton –

Talks

Jill Larson – Englewood Spring Botanical Area floristic inventory results and management strategy highlights

An update on the Black Hills National Forest's Englewood Springs Botanical Area including new information from field studies and highlights from the recently completed management strategy to define area values and recommend specific direction for the area's management.

Beth Burkhart and Kevin Kovacs – Updating the Wind Cave National Park 1999 vegetation map

The USGS Vegetation Characterization Program is a cooperative effort of the USGS and NPS to classify, describe, and map vegetation communities in more than 280 national parks. Wind Cave NP's vegetation map was completed in 1999 through a process using infrared photography, professional photointerpreters, and professional botanists to determine vegetation types/polygons and assess accuracy. Due to natural processes such as wild/prescribed fire and variable population numbers of wildlife species, some areas of the park have undergone significant vegetation changes in the last decade. Park staff are embarking on a project to use available tools and local expertise to update the map (maintaining original map accuracy) since a complete redo is not on a foreseeable horizon.

Nancy Drilling – Black Hills Owl Surveys 2009-2010

We conducted special owl surveys in spring 2009 and 2010 to examine the distribution and status of owls in the Black Hills. We did not find any big surprises, but we have a much clearer understanding of the distribution and species diversity of this enigmatic group of birds.

David Drons – An inventory of native bees (Hymenoptera: Apoidea) in the Black Hills of South Dakota

Although bees are an extremely important component of virtually every ecosystem, they remain poorly studied in South Dakota. This study is the first inventory of native bees in the Black Hills region with the main goal to provide records of native bees and their floral hosts. Sample sites are representative of all expected ecological communities of the black hills with a focus on flower rich meadows, ridge tops and peak balds. From May to September of 2010 over 40 sites were visited, and roughly 5,000 bees collected by pan trap, hand netting and community volunteer collectors. Preliminary findings show bees represented over 20 genera. This study has also provided several new state species records. Identification of bees is ongoing and is expected to yield close to 200 species overall and contain more new state records. Sampling is scheduled to continue during the same period in 2011, with expectations to repeat site collections regularly and a stronger focus on net collection for less common species.

Benjamin van Ee and Mark Gable – A revision of the Flora of South Dakota

We report on the effort to produce a revision of the flora of South Dakota including new species reports, updated taxonomy and revision of keys. Additionally we will include a clarification of taxa that have been problematic in the flora of the state.

Daryl Mergen and Mark Gabel – Analyses of *Phleum* species (timothy and alpine timothy) in the Black Hills of South Dakota

Numerous misidentifications of *Phleum* species have been observed. Contributing to the problem may be the use of variable characters in commonly used identification keys. We provide statistical analyses of >200 specimens and suggestions for identification.

Kate Cueno – Initial ecological effects of thin and chip on two ponderosa pine forests in the Black Hills

We examined the effect of thinning and chipping in ponderosa pine forests at Wind Cave National Park and Mt. Rushmore National Monument. By comparing thin-chip treatment to unthinned and thin-only controls we were able to tease apart the effects of thinning from the effects of wood chip application. We examined the effect of wood chip application on understory plants, ponderosa pine regeneration and soil available inorganic nitrogen. A greenhouse experiment was used to assess the effects of wood chip depth on seedling emergence and growth of several grass and forb species common to our study sites. Thinning did not elicit an understory response in the first year following treatment, while wood chip application caused slight decreases in understory plant richness and productivity. There was no change in plant community composition as a result of treatments. Ponderosa pine germinants established equally well in wood chips as in other areas. In the greenhouse, increasing wood chip depth created an increasing barrier to plant emergence and growth. We observed a small decrease in NO_3^- -N in thin-chip plots at one study site, but no effect at the other site.

Amy Symstad and Jayne Jonas – Factors that affect plant species richness in Great Plains grasslands:

What do we know?

Species richness and diversity are important metrics of the status of a plant community, but a synthesis of how they are affected by fluctuations in weather, management practices, and other ecological drivers has not been done before. We report the results of our synthesis on this topic.

Anine Smith, Alan Knapp, and Amy Symstad – Ecosystem and community responses to nitrogen deposition in two northern Great Plains national parks

Increased nitrogen (N) deposition is currently one of the primary drivers of plant species composition change in terrestrial ecosystems globally. General effects of increased soil N supply caused by deposition include increased production, decreased species richness and increased dominance of invasive plants. These effects may vary, depending on how N-limited the ecosystem is. Changes in community structure can occur through changes in ecosystem conditions or alterations in competitive interactions. N addition studies typically use unrealistic amounts of N to ensure immediate and drastic responses occur. This study focuses on identifying a threshold of N addition response, below which there is no significant response to the given dose. We are examining three Northern Great Plains sites in South Dakota and focusing on aboveground primary production and plant community responses. First we will determine how N-limited each site is and when a given N dose increases the N available to plants. N addition rates are 0, .25, .50, .75, 1.0, 2.0, 4.5, 6.8 and 10.0 g N/m² with a subset of treatments receiving supplemental water. We will then assess responses in production, species composition and community structure. Understanding how water limitation and the abiotic properties of the native soil affect responses to N levels will enable us to forecast community responses to increased N deposition and better understand nutrient cycling in this understudied grassland type.

Milt Haar – Spurge flax (*Thymelaea passerina*) at Badlands National Park: Discovery and preliminary herbicide control trials

In the fall of 2009, a new invasive and exotic plant, spurge flax (*Thymelaea passerina*), was discovered in Badlands National Park. A subsequent survey found approximately 36 acres infested. Park managers would like to respond rapidly, but are prevented from doing so by a lack of management information. One of the first management needs is an effective herbicide. To address this need an herbicide screen

was conducted in the field at Badlands National Park during the summer of 2010. The results of this study, a description of the current spurge flax problem, and plans for study and management will be presented.